In The Claims:

1. (Withdrawn) A method of measuring nonstationary oscillatory motion of a sample, said method comprising the steps of:

illuminating said sample with an illuminating optical fiber;

detecting reflected backscattered light from said sample with a plurality of detecting optical fibers;

coupling each optical fiber of said plurality of detecting optical fibers with a modulating optical fiber; and

generating measurements of said nonstationary oscillatory motion of said sample.

2. (Withdrawn) The method of claim 1 further comprising a step of splitting a light beam from a light source.

3. (Withdrawn) The method of claim 2 wherein said step of splitting a light beam comprises a step of generating an incident light beam and a modulating light beam.

4. (Withdrawn) The method of claim 3 further comprising a step of coupling said modulated light beam to a plurality of modulating optical fibers.

5. (Withdrawn) The method of claim 3 wherein said step of coupling each optical fiber of said plurality of detecting optical fibers with a modulating optical fiber comprises

individually coupling each optical fiber of said plurality of detecting optical fibers with a separate modulating fiber.

6. (Withdrawn) The method of claim 2 wherein said step of detecting backscattered light from said sample with a plurality of detecting optical fibers comprises detecting light with a plurality of detecting optical fibers arranged in a predetermined arrangement.

7. (Withdrawn) The method of claim 6 wherein said step of detecting light with a plurality of detecting optical fibers arranged in a predetermined arrangement comprises detecting light with a plurality of detecting optical fibers arranged symmetrically around said illuminating optical fiber.

8. (Withdrawn) The method of claim 1 further comprising a step of coupling each photodetector of a plurality of photodetectors to a pair of optical fibers, each pair of optical fibers having a detecting optical fiber and a modulating optical fiber.

9. (Withdrawn) The method of claim 8 further comprising a step of coupling a computer to said plurality of photodetectors.

10. (Withdrawn) The method of claim 1 wherein said step of generating measurements of said nonstationary oscillatory motion comprises generating measurements of said ciliary nonstationary oscillatory motion of an organic tissue sample.

11. (Withdrawn) The method of claim 1 further comprising a step of generating power spectral densities of photon count sequences using wavelet analysistransformation.

12. (Withdrawn) The method of claim 1 further comprising a step of generating power spectral densities of photon count sequences using periodogram convolution analysis.

13. (Withdrawn) The method of claim 1 further comprising a step of generating power spectral densities of photon count sequences using cumulative autocorrelation analysis.

14. (Withdrawn) The method of claim 1 further comprising a step of deriving a ciliary beat frequency and a metachronal wave period of the cilia derived from a frequency spectrum obtained from power spectral densities.

15. (Withdrawn) A method of measuring nonstationary oscillatory motion of a sample, said method comprising the steps of:

illuminating said sample with an illuminating optical fiber;

detecting reflected backscattered light from said sample with a plurality of detecting optical fibers positioned around said illuminating optical fiber in a predetermined arrangement; and

generating measurements of said nonstationary oscillatory motion of said sample.

16. (Withdrawn) The method of claim 15 further comprising a step of splitting a light beam into an incident light beam and a modulating light beam.

17. (Withdrawn) The method of claim 16 further comprising a step of coupling said modulated light beam to a plurality of modulating optical fibers.

18. (Withdrawn) The method of claim 17 further comprising a step of coupling each optical fiber of said plurality of detecting optical fibers with a modulating optical fiber of said plurality of modulating fibers.

19. (Withdrawn) The method of claim 15 wherein said step of generating measurements of said nonstationary oscillatory motion comprises generating measurements of said ciliary nonstationary oscillatory motion of an organic tissue sample.

20. (Withdrawn) The method of claim 15 further comprising a step of generating power spectral densities of photon count sequences using wavelet transformationanalysis.

21. (Withdrawn) The method of claim 15 further comprising a step of generating power spectral densities of photon count sequences using periodogram convolution analysis.

22. (Withdrawn) The method of claim 15 further comprising a step of generating power spectral densities of photon count sequences using cumulative autocorrelation analysis.

23. (Withdrawn) The method of claim 15 further comprising a step of deriving a ciliary beat frequency and a metachronal wave period of the cilia derived from a frequency spectrum obtained from power spectral densities.

24. (Withdrawn) A method of measuring nonstationary oscillatory motion of a sample, said method comprising the steps of:

illuminating said sample with an illuminating optical fiber;

detecting reflectedbackscattered light from said sample with a plurality of detecting optical fibers symmetrically positioned around said illuminating optical fiber;

coupling each optical fiber of said plurality of detecting optical fibers with a modulating optical fiber of a plurality of modulating optical fibers; and

generating measurements of ciliary nonstationary oscillatory motion of an organic tissue.

25. (Withdrawn) The method of claim 24 further comprising a step of splitting a light beam from a light source into an incident light beam and a modulating light beam.

26. (Withdrawn) The method of claim 24 further comprising a step of coupling said modulated light beam to a plurality of modulating optical fibers.

27. (Withdrawn) The method of claim 24 further comprising a step of coupling each photodetector of a plurality of photodetectors to a pair of optical fibers, each pair of optical fibers having a detecting optical fiber and a modulating optical fiber.

28. (Withdrawn) The method of claim 27 further comprising a step of coupling a computer to said plurality of photodetectors.

29. (Withdrawn) The method of claim 24 further comprising a step of generating power spectral densities of photon count sequences using wavelet analysis.

30. (Withdrawn) The method of claim 24 further comprising a step of generating power spectral densities of photon count sequences using periodogram convolution analysis.

31. (Withdrawn) The method of claim 24 further comprising a step of generating power spectral densities of photon count sequences using cumulative autocorrelation analysis.

32. (Withdrawn) The method of claim 24 further comprising a step of deriving a ciliary beat frequency and a metachronal wave period of the cilia derived from a frequency spectrum obtained from power spectral densities.

33. (Withdrawn) A method of measuring nonstationary oscillatory motion of a sample, said method comprising the steps of:

splitting a light beam from a light source into an incident light beam and a modulating light beam;

illuminating a sample with said incident light beam by way of an illuminating optical fiber;

detecting reflectedbackscattered light from said sample with a plurality of detecting optical fibers symmetrically positioned around said illuminating optical fiber;

coupling said modulated light beam to a plurality of modulating optical fibers;

coupling each optical fiber of said plurality of detecting optical fibers with a modulating optical fiber of said plurality of optical fibers;

coupling each photodetector of a plurality of photodetectors to a pair of optical fibers, each pair of optical fibers having a detecting optical fiber and a modulating optical fiber; and

generating measurements of ciliary nonstationary oscillatory motion of an organic tissue.

34. (Currently Amended) An apparatus for measuring nonstationary oscillatory ~~motion~~ motions of a sample wherein said motions are less than 10 microns in magnitude, said apparatus

comprising:

a light source;

an illuminating optical fiber coupled to said light source; and

a plurality of detecting optical fibers positioned around said illuminating optical fiber in a predetermined arrangement and coupled to receive ~~reflectedbackscattered~~ reflected backscattered light from said sample.

35. (Original) The apparatus of claim 34 wherein said light source comprises a laser light source.

36. (Original) The apparatus of claim 34 wherein said plurality of detecting optical fibers comprise single mode optical fibers.

37 (Original) The apparatus of claim 34 wherein said plurality of detecting optical fibers are arranged symmetrically around said illuminating optical fiber.

38. (Original) The apparatus of claim 34 further comprising a beam splitter coupled to said light source.

39. (Original) The apparatus of claim 34 further comprising a modulating optical fiber bundle having a plurality of modulating optical fibers.

40. (Original) The apparatus of claim 34 wherein each detecting optical fiber of said plurality of detecting optical fibers is coupled to a modulating optical fiber.

41. (Original) The apparatus of claim 34 further comprising a plurality of detectors, each detector being coupled to a pair of optical fibers comprising a detecting optical fiber and a modulating optical fiber.

42. (Currently Amended) An apparatus for measuring nonstationary oscillatory ~~motion~~ motions of a sample wherein said motions are less than 10 microns in magnitude, said apparatus comprising:

a light source;

an illuminating optical fiber coupled to said light source;

a plurality of detecting optical fibers positioned symmetrically around said illuminating optical fiber and coupled to receive ~~reflectedbackscattered~~ reflected backscattered light from said sample;

a plurality of modulating optical fibers coupled to said plurality of optical fibers; and

a plurality of detectors, each detector being coupled to a pair of optical fibers comprising a detecting optical fiber and a modulating optical fiber for each simultaneous independent nonstationary oscillatory motion measurement.

43. (Withdrawn) An apparatus for measuring nonstationary oscillatory motion of a sample, said apparatus

comprising:

a light source;

an illuminating optical fiber coupled to said light source;

a plurality of detecting optical fibers coupled to receive reflectedbackscattered light from said sample; and

a plurality of modulating optical fibers wherein each modulating optical fiber is coupled to a detecting optical fiber of said plurality of detecting optical fibers.

44. (Withdrawn) The apparatus of claim 43 wherein said light source comprises a laser light source.

45. (Withdrawn) The apparatus of claim 43 wherein said plurality of detecting optical fibers comprise single mode optical fibers.

46. (Withdrawn) The apparatus of claim 43 wherein said plurality of detecting optical fibers are positioned around said illuminating optical fiber in a predetermined arrangement.

47. (Withdrawn) The apparatus of claim 43 further comprising a beam splitter coupled to said light source.

48. (Withdrawn) The apparatus of claim 43 further comprising a modulating optical fiber bundle having said plurality of modulating optical fibers.

49. (Withdrawn) An apparatus for measuring nonstationary oscillatory motion of a sample, said apparatus

comprising:

a laser light source;

a beam splitter coupled to said light source;

an illuminating optical fiber coupled to said light source;

a plurality of detecting optical fibers coupled to receive backscattered light from said sample, wherein said plurality of detecting optical fibers are symmetrically positioned around said illuminating optical fiber;

a modulating optical fiber bundle having a plurality of modulating optical fibers, wherein each modulating optical fiber is coupled to a detecting optical fiber of said plurality of detecting optical fibers; and

a plurality of detectors, each detector being coupled to a pair of optical fibers comprising a detecting optical fiber and a modulating optical fiber.